to the ethnologist and philologist. But they are numerically too insignificant to claim further notice here.

The Island of Cyprus presents no fresh ethnical elements beyond those specified in our scheme. The bulk of the population are Greek, or, at all events, a mixed Phœnician, Carian, and Greek people that have long been Hellenised. The rest are mainly Turks, and both have hitherto been permitted to live harmoniously together. They are not likely to prove a source of trouble to their new rulers.

As to the future of this varied and interesting region, it is not for us to speak. Everywhere there are evidences that at one time it must have been thickly populated and its resources highly developed. What the country is capable of may be learned from the classical reports of Palgrave, Scherzer, and other British and foreign consuls, as well as from the various special reports on the much-talked-of trans-Asiatic railway. In this connection books worth referring to are Palgrave's "Essays on Eastern Questions," Goldsmid's "Telegraph and Travel," and Goldsmid and Blanford's "Eastern Persia." Good authorities to consult on the geography and science of the region are the various articles in the "English Cyclopædia," recent volumes of Petermann's *Mittheilungen*, Hellwald's "Die Erde und ihre Völker," the *Bulletin* of the French Geographical Society, Chihacheff's "Asie Mineure," Schliemann's and Cesnola's works, Thielmann's "Caucasus, Persia, and Turkey," Unger's "Die Insel Cypern," besides older well-known works.

TYCHO BRAHE'S CORRESPONDENCE[1]

WE have received the first three *fasciculi* of this work, projected by M. Friis in 1876. Its purpose is to place in the hands of the astronomer, in a collective form, the letters of Tycho and his correspondence, preserved in the Royal Library at Copenhagen, and in the libraries of Vienna, Pulkowa, and Basle, and others which may be found elsewhere, and it is expected that the work will be complete in about sixteen parts. The earliest letter is one from Tycho to Joannes Aalborg, afterwards librarian at Copenhagen, dated January 14, 1568. There are letters to or from Steno Bille, or Bilde (an uncle of Tycho's, at whose house, it may be remembered, he detected the celebrated star of 1572 which is associated with his name), Thaddæus Hagecius, physician to the Emperor Rudolph II., Paulus Haintzel, Hieronymus Wolfius, and others, whose names occur in the well-known treatise, "De Nova Stella Anni 1572." In a letter, No. 47, written in 1584, to Henricus Brucæus, Tycho enters into some discussion of the "Hypothesis Copernici," in another to Hagecius (we follow the Latin names in use at the time) he refers at length to the parallax of the comet of 1577, observed by him with much care; from his observations of this body, as Pingré says, "on en concluait que le lieu des comètes était au-delà du ciel de la Lune."

The third part contains a finely-executed portrait of Tycho (Woodburytype) from the oil painting in the possession of Dr. Crompton, of Manchester, for information respecting which M. Friis refers his readers to NATURE, vol. xv. p. 406, and vol. xvi. p. 501; an account of it also appeared in the *Proceedings* of the Manchester Literary and Philosophical Society, October 31, 1876.

We may express the hope that the success attending the publication of the first three numbers of this work may be sufficiently encouraging to induce a more rapid issue of the remaining parts.

OUR ASTRONOMICAL COLUMN

PERIODICAL COMETS IN 1879.—Of the known comets of short period, two will pass through perihelion in the spring of the ensuing year. The comet discovered by Brorsen at Kiel in February, 1846, and since observed in 1857, 1868, and 1873, according to the elements deduced at the last appearance by Dr. Schulze, will arrive at perihelion again on April 1, perturbations, which must be light in the actual revolution, being neglected. This comet still approaches very near to the orbit of the planet Jupiter, though perhaps not quite so close as in 1842, when the present form of orbit was impressed upon it by the action of the planet, the point of nearest approach being at a true anomaly of 167° 48′, or in heliocentric longitude 283° 30′ (Eq. 1870); when last passing this point of its orbit, early in October, 1875, Jupiter was distant from the comet, 5·58, whence the effect of his attraction upon the length of the present revolution will be comparatively trifling. At the ascending node the comet may approach pretty near to Venus, as was the case in October, 1873, a few days previous to the last perihelion passage. To obtain an idea of the track in the heavens in the spring of next year, we may assume that the comet will arrive at its least distance from the sun at midnight on April 1 (guided by Schulze's elements) and will have the following positions:—

12h.	R.A.	N.P.D.	Distance from Earth.	Distance from Sun.	Intensity of Light.
March 12...	23°·6 ...	89°·7 ...	1·35 ...	0·71 ...	1·08
,, 22...	32·4 ...	80·5 ...	1·20 ...	0·63 ...	1·77
April 1...	41·6 ...	69·7 ...	1·05 ...	0·59 ...	2·58
,, 11...	51·7 ...	57·5 ...	0·91 ...	0·63 ...	3·06
,, 21...	63·3 ...	45·9 ...	0·81 ...	0·71 ...	3·00
May 1...	85·0 ...	33·3 ...	0·74 ...	0·83 ...	2·66
,, 11...	118·6 ...	27·2 ...	0·71 ...	0·96 ...	2·12
,, 21...	154·2 ...	30·8 ...	0·74 ...	1·09 ...	1·53
,, 31...	176·3 ...	40·1 ...	0·81 ...	1·23 ...	1·02
June 10...	189·0 ...	50·2 ...	0·91 ...	1·36 ...	0·65

Whence it may be expected that the comet will be observed in the latter half of March, attaining its greatest brightness as it traverses the constellation Perseus, about the middle of April.

The second comet due in 1879 is that discovered by M. Tempel at Marseilles in April, 1867, and re-observed in 1873, after undergoing great perturbation from a close approach to the planet Jupiter, early in 1870. The best elements for 1873 are those of Sandberg, according to which the next perihelion passage would fall on April 26, without taking into account the effect of planetary action, which, as in the case of Brorsen's comet, is not likely to be material in the present revolution; indeed, when the comet was last in aphelion, and nearest to the orbit of Jupiter, the planet was on the opposite side of the sun.

Assuming, then, that the next perihelion passage will take place at midnight on April 26, the following positions and distances will result:—

	R.A.	N.P.D.	Distance from Earth.	Distance from Sun.	Intensity of Light.
April 26 ...	261°·8 ...	106°·5 ...	0·916 ...	1·770 ...	0·38
May 16 ...	262·9 ...	109·3 ...	0·819 ...	1·778 ...	0·47
,, 26 ...	262·1 ...	111·0 ...	0·796 ...	1·789 ...	0·49
June 5 ...	260·7 ...	112·6 ...	0·791 ...	1·804 ...	0·49
June 15 ...	259·1 ...	114·5 ...	0·808 ...	1·823 ...	0·46

The comet under the above condition, will therefore be situate during the whole period in the southern part of the constellation Ophiuchus, and it may be hoped that it will be well observed, as, during the ensuing revolution, material perturbations of the elements may be again occasioned by the action of Jupiter, from which body the comet at the beginning of October, 1881, may not be distant more than 0·55, a degree of approximation that, although not sufficient to lead to such heavy disturbance of the comet's motion as in 1870, will yet render a precise determination of the orbit in 1879 very essential for an accurate prediction of the apparent track in 1885.

In September, 1879, another return of Biela's comet will be due with the elements of 1866, but we reserve a few remarks upon this subject for another note.

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[1] "Tychonis Brahei, et ad eum doctorum virorum Epistolæ nunc primum collectæ et editæ," a F. R. Friis. (D. Nutt: London.)

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A NEW COMET.—By telegram to the Vienna Academy of Sciences, with which body rests the award of the medal for cometary discoveries, it is announced that a telescopic comet was detected on July 7 by Mr. Swift, of Rochester, N.Y. The place at 14h. was in R.A. 265° and N.P.D. 72°, if the telegram is to be read according to the suggestion of the late Prof. Littröw; the comet was a faint diffused object, and had a slow motion towards the south-west.

It would be an advantage if arrangements could be made for the communication of telegraphic notices of these discoveries to the Royal Astronomical Society, which is the proper centre for such information in this country.

MINOR PLANETS.—On June 26 Prof. Peters detected No. 188 in R.A. 15h. 37m., N.P.D. 106° 18′, shining as a star of the twelfth magnitude. No. 173, discovered by Borrelly on August 2, 1877, has been named *Ino*, and No. 180, which was found by Cottenot on February 2, 1878, it is proposed to call *Eucharis*.

SATURN'S SATELLITES.—Mr. Marth has again prepared, evidently at great trouble, ephemerides of the five inner satellites of Saturn, which will be found in Nos. 2,205-6 of the *Astronomische Nachrichten*, as far as October 23, the conclusion to follow. With such elaborate prediction, the regular observation of these faint objects should be assured; indeed Mr. Marth's exertions in this direction have already led to excellent results.

BIOLOGICAL NOTES

THE MALE OF SALPA.—The development of the spermatozoa in the Salpæ has hitherto not been satisfactorily studied. Only two years ago Mr. Brooks, of Boston, stated that the testis developed from the elæoblast, and moreover maintained that of the two generations which alternate in these pelagic Tunicates—the one set, the "chain" Salpæ, are exclusively males, whilst the other set, the "solitary" Salpæ, are exclusively females. This view involved the theoretical assumption that the single egg which is found in every individual of a chain of Salpæ does not *really* belong to that individual which is only a male, and has the egg laid into it by the solitary Salpa from which the chain is derived by budding. Accordingly, the elæoblast in the solitary Salpa which, according to Brooks, is female, represents the testis and points to a primitive hermaphroditism; whilst in the chain Salpæ (actual males, according to Brooks), the elæoblast becomes testis. The more usual view is that the solitary Salpæ are not sexually differentiated at all, and that the chain Salpæ are hermaphrodites. Prof. Salensky, of Kasan, has recently published (*Zeitsch. wiss. Zoologie*, 1878, Supplement 2) some observations on this matter, having previously given a very careful account of the development of these organisms, and at the same time he enters into a discussion of the relationships of various Tunicata which has much interest. He shows that the eggs found in the chain Salpæ cannot be regarded as given off from the solitary mother into the budded chain because there is no specialised ovarian cord or rudiment in the proliferous mother. She differs in this respect from the adult proliferous persons in Pyrosoma—which really, as shown by Huxley and by Kowalewsky, give to their buds a part of their own ovarian rudiment. The solitary Salpa has nothing of the kind to give. Further, Salensky shows that the elæoblast has nothing to do with the testis. It exists in the solitary Salpa, and in the chain Salpa appears only for a brief period, and then disappears; but is certainly *not* developed into a testis. Accordingly the solitary Salpa is devoid of all trace of either ovary or testis. The elæoblast appears very probably, according to Salensky, to represent the notochord. The tailed larvæ of the true Ascidians possess a well-developed notochord, and present to us the ancestral form of the Tunicata, which only persists to the adult condition in the Appendiculariæ. In the Ascidiæ the tail and notochord atrophy as development advances. In Doliolum the young form which develops from the egg has a short tail with an axis apparently intermediate in character between the notochord of the Ascidian tadpole and the elæoblast of the Salpæ. The sexual form of Doliolum developed by budding from a second sexless generation, is devoid of tail. Salensky holds that we must distinguish in the Tunicata such simple budding from the adult as is presented in the Pyrosoma colonies and others, and that kind of budding which definitely characterises the alternation of generations morphologically distinguishable from one another. The sexless nurse, constituting the one generation, appears to retain the characteristics of the ancestral Tunicate form with tail and notochord. It corresponds to the Ascidian tadpole, and is represented in more or less completely modified condition by the tailed sexless nurses of Doliolum, by the solitary Salpæ, and by the Cyathozooid or primary person of the Pyrosoma colony, which gives rise to the colony by a process of budding which it is necessary to distinguish very widely from that which the persons of the colony exhibit at a later stage themselves. Just as the Ascidian tadpole becomes itself atrophied and metamorphosed so as to form the sexually mature Ascidian, so do the "nurses" above mentioned give rise by budding to a generation not possessing their own archaic characters, but bearing sexual organs and corresponding to the adult Ascidian, and thus we have an alternation of form in the successive gamic and agamic generations. Should multiplication by budding or fission be confined to the later sexual phase, then there is no morphological alternation of generations. Salensky thinks that a hopeful way of gaining a deeper insight into the phenomenon of true metagenesis lies in the further study of the cases presented by Tunicata. E. R. L.

THE STRUCTURE AND DEVELOPMENT OF SPONGES.—The sponges are at present attracting a very large amount of attention from zoologists and are undergoing investigation in the fresh condition, so that their living soft tissues are subjected to the refined methods of modern histology. Prof. Franz Eilhard Schulze, of Gratz, is foremost in this study, the way in which was led by Ernst Haeckel in his monograph of the Calcispongiæ. Dr. Keller, of Zürich, who has previously published on the development of certain calcareous sponges, has now (*Zeitsch. wiss. Zoologie*, 1878, part 4) given attention to *Reniera semitubulosa*, O. Schm., a representative of the commoner marine fibrous sponges. Schulze, by the use of silver nitrate, discovered a differentiated epithelial covering to the body surface, which was previously denied by Keller, who now admits Schulze's observation to be correct, and adds a similar observation of his own on Reniera. Keller describes the syncytium of Reniera, denies the existence of muscular cells, and recognises certain "nutritive wander-cells" in the body-wall of the sponge. His observations on "starch-containing cells" are of special importance. He was led to attach a high functional importance to the nutritive wander-cells which pass inwards from the flagellate endoderm-cells, carrying with them assimilated matter necessary for the nutrition of the syncytium, which forms a thick wall beyond. His conception of their importance was confirmed by the discovery that many of them contain starch. Keller has made an extensive search for starch in the cell-elements of sponges, and has found it, or rather we should say has obtained the blue reaction with iodine, in cells from the following sponges:—(1) *Spongilla lacustris*, (2) *Reniera litoralis*, nov. spec., (3) *Myxilla fasciculata*, (4) *Geodia gigas*, (5) *Tethya lyncurium*, (6) *Suberites massa*, (7) *Suberites flavus*. The substance, whatever it may be, which gives the blue reaction, is not in a granular condition, but fluid, and in those cells in which it occurs occupies a large vacuole comparable to a fat vacuole. Neither ordinary nor absolute alcohol, nor

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